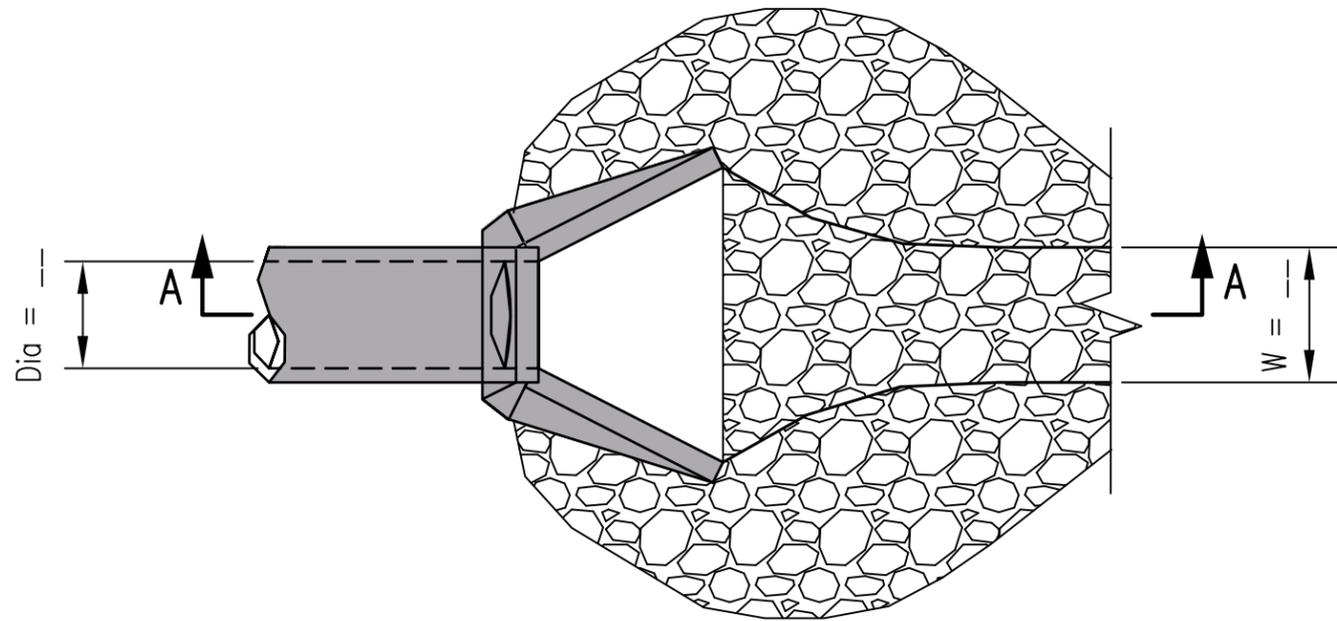


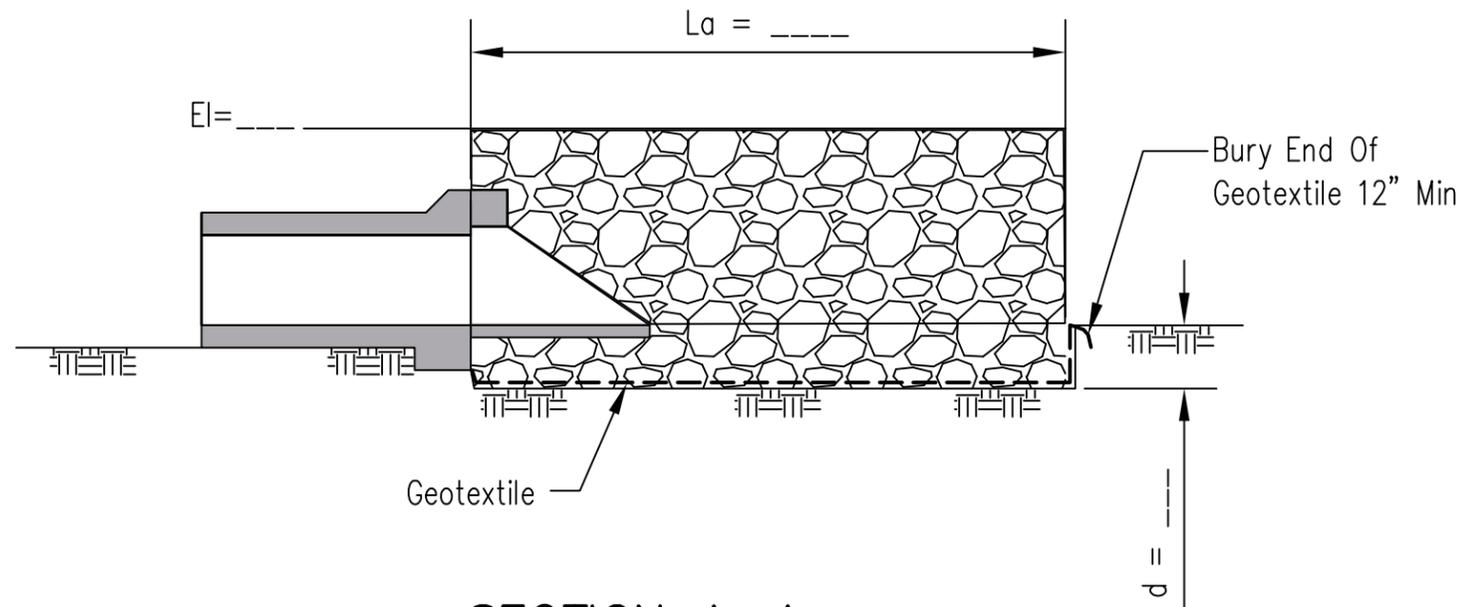
Pipe Outlet To Well-Defined Channel



PLAN

NOTES:

1. The rock riprap shall meet IDOT requirements for Gradation No. _____, Quality Designation "A" or as designated by engineer.
2. Geotextile (non-woven, needle punched) Minimum criteria:
 Grab tensile strength (lb) ASTM D 4632 _____ 202
 Elongation at failure (%) ASTM D 4632 _____ ≥ 50
 Trapezoidal tear strength (lb) ASTM D 4533 _____ 79
 Puncture strength (lb) ASTM D 6241 _____ 433
 Ultraviolet light (% retained strength) ASTM D 4355 _____ min 50
 Apparent opening size (AOS) ASTM D 4751 _____
 _____ max 0.22 mm (US sieve size 70)
 Permittivity sec^{-1} / ASTM D 4491 _____ min 0.70
3. Any geotextile splices shall overlap a minimum of 18 inches, with upstream or upslope geotextile overlapping the abutting downslope geotextile.
4. Apron shall extend across the channel bottom and up the channel banks to an elevation one foot above the maximum tailwater depth or to the top of bank.
5. Rock thickness d shall be at least 1.5 times the riprap D_{100} size.
6. Apron length L_a and rock riprap shall be sized according to Illinois Urban Manual Rock Outlet Protection standard 910 minimum $L_a = 10$ ft.



SECTION A-A

Date	4/1/14
Designed	
Drawn	M. QUINONES
Checked	
Approved	

PIPE OUTLET TO CHANNEL

United States
Department of
Agriculture

Natural Resources
Conservation Service